

CLAIMS

Therefore, having thus described the invention, at least the following is claimed:

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1. A computer system communicatively coupled to a network,
comprising:
 - 3 a programmable non-volatile memory;
 - 4 at least one microprocessor operatively coupled to execute at least one
5 instruction from the programmable non-volatile memory in response to a boot request,
6 the microprocessor configured to controllably write to the programmable non-volatile
7 memory; and
8 at least one fixed storage device operatively coupled to the at least one
9 microprocessor, the storage device containing a boot image that is configured with
10 appropriate instruction code suited to transition the at least one microprocessor to an
11 operational mode, wherein the at least one fixed storage device receives and stores a
12 modified boot memory containing execution code and data necessary for the at least
13 one microprocessor to write a firmware upgrade to the programmable non-volatile
14 memory.
 - 1 2. The computer system of claim 1, wherein the modified boot memory
2 directs a system loader to direct the microprocessor to load a firmware upgrade patch.
 - 1 3. The computer system of claim 2, wherein the firmware upgrade patch
2 comprises an install application.
 - 1 4. The computer system of claim 2, wherein the firmware upgrade patch
2 comprises a copy of the new firmware.
 - 1 5. The computer system of claim 2, wherein the firmware upgrade patch
2 comprises a flash application.
 - 1 6. The computer system of claim 5, wherein the flash application
2 comprises a bootable kernel.

1 7. The computer system of claim 6, wherein the bootable kernel
2 comprises a system loader interface.

1 8. The computer system of claim 6, wherein the bootable kernel
2 comprises a reboot logic.

1 9. A computer network, comprising:
2 a plurality of computer systems communicatively coupled to a network
3 infrastructure, each of the plurality of computer systems configured with a non-
4 volatile memory containing a firmware version designated for replacement and
5 configured with a fixed storage device containing a boot image having appropriate
6 instruction code suited to transition the respective computer system to an operational
7 mode;

8 a user input device communicatively coupled to at least one computer system
9 communicatively coupled to the network infrastructure, the at least one computer
10 system configured with write access permission for the respective fixed storage device
11 associated with each of the plurality of computer systems, wherein an input from the
12 user input device initiates a transfer of a modified boot memory map and a firmware
13 upgrade patch to the plurality of computer systems.

1 10. The network of claim 9, wherein the firmware upgrade patch and the
2 modified boot memory include instruction code necessary to support the replacement
3 of the firmware version designated for replacement by each of the respective plurality
4 of computer systems.

1 11. The network of claim 10, wherein the firmware upgrade patch
2 comprises a flash application that contains a bootable kernel.

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All 1 12. The network of claim 10, wherein the firmware upgrade patch
2 comprises a flash application that contains a system loader interface.

1 13. The network of claim 10, wherein the firmware upgrade patch
2 comprises a flash application that contains a reboot logic.

1 14. A computer system communicatively coupled to a network,
2 comprising:

3 means for accessing data stored on a memory device that retains data when
4 power is removed from the memory device, the accessing means responsive to power
5 being applied to the computer system; and

6 means for selectively writing to the memory device in response to a remote
7 input designated to initiate the replacement of the data stored on the memory device,
8 wherein the new data to be stored and a bootable kernel are stored on a fixed storage
9 device within the computer system in response to the remote input.

1 15. The computer system of claim 14, wherein the accessing means
2 comprises a programmable non-volatile memory.

1 16. The computer system of claim 14, wherein the writing means further
2 comprises:

3 means for storing a system loader interface on the fixed storage device; and
4 means for modifying an initial system loader address in response to the remote
5 input.

1 17. The computer system of claim 15, wherein the programmable non-
2 volatile memory comprises an electrically erasable programmable read only memory.

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1 18. A method for performing a firmware upgrade, comprising:
2 delivering a firmware install patch containing a modified boot image to a boot
3 disk within a plurality of networked computer systems each of said computer systems
4 having a firmware version designated for the firmware upgrade;
5 initiating an install application contained within the firmware install patch,
6 said install application containing instructions suited to perform the firmware upgrade;
7 modifying a system loader configuration file in response to the install
8 application to direct a microprocessor to execute instructions from the modified boot
9 image upon a subsequent microprocessor boot request;
10 initiating a microprocessor boot request in response to the install application
11 that loads a plurality of instructions in accordance with the modified boot image;
12 erasing the firmware within each of the plurality of networked computer
13 systems in response to the install application; and
14 writing the new firmware to each of the plurality of networked computer
15 systems in response to the install application.

1 19. The method of claim 18, wherein delivering a firmware install patch
2 comprises a network data transfer.

1 20. The method of claim 18, wherein the delivered firmware install patch
2 comprises a modified boot image that contains a flash application.

1 21. The method of claim 18, further comprising:
2 installing an operating system that requires the new firmware;
3 installing software patches that require the new firmware;
4 redirecting the initial system loader to select the appropriate memory address
5 upon subsequent microprocessor boot requests to apply the upgraded firmware,
6 operating system, and software patches; and
7 removing the firmware install patch from the computer system.

1 22. The method of claim 20, wherein the flash application comprises a
2 bootable kernel.

1 23. The method of claim 20, wherein the flash application comprises a
2 system loader interface.

1 24. The method of claim 20, wherein the flash application comprises a
2 reboot logic.

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1 25. The method of claim 20, wherein the flash application comprises a
2 firmware update logic.

1 26. The method of claim 20, wherein the flash application comprises a
2 non-volatile memory interface.
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